

MEMORANDUM OF AGREEMENT
BETWEEN
THE UNITED STATES DEPARTMENT OF ENERGY
AND
THE POWER REACTOR AND NUCLEAR FUEL DEVELOPMENT CORPORATION, JAPAN
FOR JOINT COLLABORATION
IN THE FIELD OF
THE NUCLEAR FUEL CYCLE: LIQUID METAL REACTOR (LMR) REPROCESSING TECHNOLOGY

This Agreement is made as of the ____ day of _____, 1987, between the United States Department of Energy (DOE) and the Power Reactor and Nuclear Fuel Development Corporation, Japan (PNC), hereinafter called the "Parties."

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WHEREAS

DOE and PNC have cooperated in selected areas of fast breeder reactor technology including the fuel cycle under their Agreement in the Field of Liquid Metal-Cooled Fast Breeder Reactors of January 31, 1979, hereinafter called the "DOE/PNC LMFBR Agreement."

DOE and PNC are both carrying out activities on spent fuel reprocessing of fast reactor fuels and, in consideration of the high degree of compatibility between their respective programs in terms of current activities and future interest, DOE and PNC have a mutual interest in establishing this cooperation under the DOE/PNC LMFBR Agreement in the

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field of the nuclear fuel cycle - LMR reprocessing, hereinafter called the "Agreement," with due respect for their relevant national programs.

Both the United States and Japan are parties to the Treaty on Nonproliferation of Nuclear Weapons and, therefore, have a mutual interest in the development of nuclear energy in such a manner as to prevent the proliferation of nuclear weapons.

DOE and PNC believe that a broad-based, long-term cooperative program of equitable sharing of their respective research and development data, technology, and experience in LMR reprocessing technology would be of mutual benefit.

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DOE and PNC recognize the contribution such research and development in LMR reprocessing technology can make to safe and economic application of nuclear energy.

DOE and PNC act in certain areas related to LMR reprocessing technology through their contractors, subsidiaries, or associated industrial firms and recognize the value of supporting industrial participation in equipment and systems technology development.

IT IS AGREED AS FOLLOWS:

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ARTICLE 1 - OBJECTIVES

- 1.1 The objective of this Agreement is to provide for the exchange of a broad range of information and develop jointly technology and techniques in the field of LMR Reprocessing Technology as listed below in Article 3 of this Agreement.
- 1.2 Cooperation between the Parties shall be on the basis of mutual benefit, equality, and reciprocity.
- 1.3 It is the intent of the Parties that following the research and development phase, additional research and development and/or a facility design and operation phase may begin thereafter if both Parties agree, consistent with the programs of both Parties.

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ARTICLE 2 - COLLABORATION PROGRAM

The Program of collaboration covered by this Agreement is composed of a research and development phase in the areas of cooperation of Article 3 of this Agreement.

ARTICLE 3 - AREAS OF COOPERATION

- 3.1 At the time of signing of the Agreement, the following areas of cooperation in the research and development phase have been identified:

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I. Continuous Head End Process Technology

- a. Laser Disassembly
- b. Fuel Shearing
- c. Fuel Dissolution
- d. Off-Gas Handling

II. Advanced Solvent Extraction System and Process Automation

- a. Fluid Transfer
- b. Solvent Extraction Contactors
- c. Flowsheet Studies
- d. Solvent Treatment
- e. Process Automation
- f. Process Monitoring

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III. Advanced Remote Technology

- a. Rack Experiments
- b. Remote Sampling
- c. Signal Transmission
- d. Low-Flow Ventilation/Environmental Test Chamber
- e. Completion of Current Remote Systems Technology Exchange Items

IV. Design Optimization of Facility

- a. Radiation Dose Effects
- b. Design Support

Detailed descriptions of these areas of cooperation under this Agreement are contained in Appendix I: Technical Plan for Five-Year

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Research and Development Program. The Technical Plan shall be reviewed at least annually and revised as appropriate.

- 3.2 The above list of areas of cooperation may be modified subject to mutual written agreement of the Parties.

ARTICLE 4 - CONTENT AND FORMS OF COOPERATION

Cooperation under this Agreement may include exchange of general and specific scientific and engineering information and research and development results and methods in reprocessing technology by means of:

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- a. Exchange on a current basis of periodic, topical, and letter reports.
 - b. Joint organization of, and participation in, seminars or other meetings on specific agreed topics in reprocessing technology, within the areas of cooperation of Article 3 of this Agreement.
 - c. Short mutual visits by specialist teams or individuals to the experimental and operational facilities of the other Party, subject to the prior written agreement of the receiving Party.
 - d. Attachment of the staff of one Party, its contractors or subsidiaries or designees, to the reprocessing technology facilities of the other Party, its contractors, subsidiaries, or designees for participation to carryout the Program jointly in agreed-to research, development, design, analysis, or other experimental activities, and ongoing
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operations in the field of reprocessing technology. Such attachment shall be in accordance with Article 9 of this Agreement.

- e. Exchange or loan of equipment for testing in accordance with Article 8 of this Agreement.
- f. Other specific forms of cooperation in reprocessing technology, not included above, may be added by mutual written agreement.

ARTICLE 5 - MANAGEMENT

- 5.1 To supervise the execution of this Agreement, each Party shall name a Principal Coordinator. The Principal Coordinators shall meet at least once annually and at such other times as agreed. J.J.
- 5.2 At their meetings, the Principal Coordinators shall evaluate the status of cooperation under this Agreement. This evaluation shall include a review of the past year's activities and accomplishments under this Agreement, a review of the scope and activities planned for the coming year within each of the various areas of cooperation listed in Article 3 of this Agreement, an assessment of activities under this Agreement to assure they are consistent with each Party's program, and consideration of measures required to correct any imbalances. At the same time, each Party shall report on their reprocessing technology program. Specific scopes of work for the coming year will be agreed to in writing by the Principal Coordinators on behalf of the Parties. In addition, the Principal Coordinators shall consider new proposals for cooperation in accordance with Articles 3 and 4 of this Agreement.

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If such new proposals are accepted by both Parties, Appendix I shall be revised accordingly. Acceptance by the Parties shall be based on agreement by the respective Principal Coordinators and/or the Working Group Heads.

5.3 Day-to-day management of the cooperation under this Agreement shall be carried out by Technical Coordinators (or Program Manager) designated by the Principal Coordinators. The Technical Coordinators shall agree on specific details of cooperation in the technical areas listed in Article 3 of this Agreement, within the framework established by the respective Principal Coordinators. Each Technical Coordinator shall be responsible for working contacts between the Parties in his respective area of cooperation. Technical Coordinators may, in turn, appoint correspondents for the purpose of day-to-day implementation of the exchange on specific topics or areas.

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5.4 At periodic meetings, or by correspondence, whichever is appropriate, Technical Coordinators of each Party shall together review the progress and balance of the cooperation and, where appropriate, make recommendations on any necessary or desirable modifications taking into account information arising from the Agreement or elsewhere. Such recommendations shall be developed by the respective Technical Coordinators and agreed to by both. Technical Coordinators shall prepare reports to the Principal Coordinators for use by the Principal Coordinators at their meetings pursuant to paragraph 5.1 above. The reports shall include a summary of the year's activities and the agreed-to recommendations.

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- 5.5 A Management Plan that addresses organization, planning, and information and control procedures shall be developed and used to govern the day-to-day management of the activities carried out under the Agreement.

ARTICLE 6 - PATENTS

- 6.1 With respect to any invention or discovery made or conceived in the course of or under this Agreement --

- 6.1.1 If made or conceived by personnel of one Party (the Assigning Party) or its contractors while assigned to the other Party (Receiving Party) or its contractors, in connection with exchanges of scientists, engineers, and other specialists:

- a) The Receiving Party shall acquire all right, title, and interest in and to any such invention or discovery in its own country and in third countries, subject to a non-exclusive, irrevocable, royalty-free license in such countries to the Assigning Party, with the right to grant sublicenses, under any such invention or discovery and any patent application, patent, or other protection relating thereto, for use in LMR reprocessing programs and facilities.
- b) The Assigning Party shall acquire all right, title, and interest in and to any such invention or discovery in its own country, subject to a non-exclusive, irrevocable,

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royalty-free license to the Receiving Party, with the right to grant sublicenses, under any such invention or discovery and any patent or other protection relating thereto, for use in LMR reprocessing programs and facilities.

6.1.2 If made or conceived by a Party or its contractors as a direct result of employing information which has been communicated to it under this Agreement by the other Party or its contractors or communicated during seminars or other joint meetings, the Party making the invention shall acquire all right, title, and interest in and to such invention or discovery in all countries, subject to a grant to the other Party of a royalty-free, non-exclusive, irrevocable license with the right to grant sublicenses in and to any such invention or discovery and any patent application, patent, or other protection relating thereto, in all countries for use in LMR reprocessing programs and facilities.

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6.1.3 With regard to other specific forms of cooperation, including loans or exchanges of materials, instruments, and equipment for special joint projects, the Parties shall provide for appropriate distribution of rights to inventions or discoveries in its own country with a non-exclusive, irrevocable, royalty-free license to the other Party with the right to grant sublicenses in and to such invention or discovery for use in LMR reprocessing programs and facilities, and their rights to such inventions or discoveries in other countries should be agreed by the Parties on an equitable basis.

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- 6.2 The preceding paragraph 6.1 of this Article shall apply mutatis mutandis to design protection.
- 6.3 Neither Party shall discriminate against citizens of the country of the other Party with respect to granting any licenses or sublicenses under any invention or discovery pursuant to paragraph 6.1 above. It is understood that the licensing policies and practices of each Party may be affected because of the rights of both Parties to grant licenses within a single country. Accordingly, either Party may request, in regard to a single invention or discovery or class of inventions or discoveries, that the Parties consult in an effort to lessen or eliminate any detrimental effect that the parallel licensing authorities may have on the policies and practices of the Parties.
- 6.4 Each Party shall assume the responsibility to pay awards or compensation required to be paid to its own nationals according to its own laws. In view of the provisions of Article 35 of the Japanese Patents Act of April 13, 1959, PNC shall, prior to the assignment of any Japanese personnel to a United States facility, secure from the Japanese employer of such personnel, a commitment that the employer agrees to hold the Government of the United States of America and its contractors harmless with respect to any claim of the employee for compensation under Article 35 of the Japanese Patent Act with respect to any inventions within the scope of paragraph 1 hereof, and PNC will pay any remuneration to the inventor under said Article 35.

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ARTICLE 7 - INFORMATION

- 7.1 Each Party shall provide to the other Party on a current and timely basis information to be exchanged under this Agreement.
- 7.2 Information exchanged on work performed under this Agreement shall be in English.
- 7.3 It is recognized by both Parties that in the process of exchanging information, or in the process of other cooperation, the Parties may provide to each other "industrial property of a proprietary nature," otherwise known as "Proprietary Information." Such property or information, including trade secrets, inventions, patent information and know-how, made available hereunder which is acquired by either Party prior to, or outside, the course of these activities, and which bears a restrictive designation, shall be respected by the receiving Party and shall not be used for commercial purposes or made public without the written consent of the transmitting Party. Such property is defined as --
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- a) of a type customarily held in confidence by commercial firms;
 - b) not generally known or publicly available from other sources;
 - c) not having been made available previously by the transmitting Party to others without an agreement concerning its confidentiality; and
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- d) not already in the possession of the receiving Party or its contractors.

7.4 A Party receiving Proprietary Information, as defined in paragraph 7.3 above, and pursuant to this Agreement, shall respect the privileged nature thereof. Any document which contains Proprietary Information shall be clearly marked with the following (or substantially similar) restrictive legend:

"This document contains Proprietary Information furnished in confidence under an Agreement dated _____ between the UNITED STATES DEPARTMENT OF ENERGY and the POWER REACTOR AND NUCLEAR FUEL DEVELOPMENT CORPORATION OF JAPAN and shall not be disseminated outside these organizations, their contractors, licensees, and the concerned departments and agencies of the Governments of the U.S. and Japan without prior approval of _____."

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"This notice shall be marked on any reproduction hereof, in whole or in part. These limitations shall automatically terminate when this information is disclosed by the owner without restriction."

7.5 Nothing contained in this Agreement shall preclude the use or dissemination of non-proprietary information obtained pursuant to this Agreement. Such technical information may not be transferred outside the recipient Party's country without joint discussion and approval of the Parties.

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ARTICLE 8 - EXCHANGE OF EQUIPMENT

8.1 Both Parties agree that in the event equipment is to be exchanged or supplied by one Party to the other for use in joint projects, or projects as mutually agreed upon, the following provisions shall apply covering the shipment and use of agreed equipment.

8.1.1 The sending Party shall supply as soon as possible a detailed list of the equipment to be provided together with the relevant specifications and technical and informational documentation.

8.1.2 The equipment and necessary spare parts supplied by the sending Party for use in joint projects shall remain its property and shall be returned to the sending Party upon completion of the joint project unless otherwise agreed.

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8.1.3 The above-mentioned equipment shall be brought into operation at the host establishment only by mutual agreement between the Parties or between their senior representatives at the host establishment.

8.1.4 The host establishment shall provide the necessary premises for the equipment, and will provide for electric power, water, gas, etc., in accordance with technical requirements which shall be as mutually agreed.

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- 8.1.5 Responsibility and expenses for the transport of equipment and materials from the United States by plane or ship to an authorized port of entry in Japan convenient to the ultimate destination, and return, and also responsibility for their safekeeping and insurance en route, shall rest with DOE.
- 8.1.6 Responsibility and expenses for the transport of equipment and materials from Japan by plane or ship to an authorized port of entry in the United States convenient to the ultimate destination, and return, and also responsibility for their safekeeping and insurance en route, shall rest with PNC.
- 8.1.7 The equipment provided by the sending Party for carrying out joint projects shall be considered to be scientific, not having a commercial character.
- 8.1.8 The receiving Party shall be responsible for safekeeping and insurance en route from authorized port of entry to the ultimate destination and return.

ARTICLE 9 - EXCHANGE OF STAFF

9.1 The following provisions shall apply concerning exchanges of staff.

- 9.1.1 Whenever an exchange of staff is contemplated under this Agreement, each Party shall ensure the selection of adequate staff with skills and competence necessary to conduct the agreed upon cooperation. Each such attachment of staff shall

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be the subject of a separate attachment agreement between the Parties.

9.1.2 Each Party shall be responsible for the salaries, insurance, and allowances to be paid to its staff.

9.1.3 Each Party shall pay for the travel and living expenses of its staff when staying at the establishment of the host Party unless otherwise agreed.

9.1.4 The host establishment shall arrange for comparable accommodations for the other Party's staff and their families on a mutually agreeable reciprocal basis.

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9.1.5 Each Party shall provide all necessary assistance to the staff of the other Party as regards administrative formalities.

9.1.6 The staff of each Party shall conform to the general rules of work and safety regulations in force at the host establishment, or as agreed in separate attachment-of-staff agreements.

ARTICLE 10 - DAMAGES

10.1 Both Parties agree that the following provisions shall apply concerning compensation for damages incurred under this Agreement. It is understood that such compensation shall be in accordance with the laws of the country on whose territory damages will have been incurred, except as otherwise provided.

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10.1.1 Definitions

- a) "Staff" of a Party means the employees of the Party, its contractors and subcontractors performing services under this Agreement, and employees of these contractors and subcontractors performing services under this Agreement.
- b) "Equipment" or "Property" of a Party means the equipment or property owned by that Party, or by the contractor and subcontractors of that Party who perform services in connection with joint activities under this Agreement.

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10.1.2 First and Second Party Damages

- a) Each Party shall alone be responsible for payment of compensation for damages suffered by its staff regardless of where the damages have been incurred, and shall not bring suit or lodge any other claims against the other Party for damages to its property, except as noted in paragraphs 10.1.2 b) and c).
- b) If the damage suffered by the staff of one of the Parties is due to the gross negligence or intentional misconduct of the staff of the other Party, the latter shall reimburse the former an agreed sum of monies which the

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former would be obliged to pay to the person or persons suffering the damages.

- c) If damages to the property of one Party are due to the gross negligence or intentional misconduct of the staff of the other Party, the latter shall compensate the former for the damages suffered.

10.1.3 Third Party Damages

- a) By Defective Equipment

Damages caused to the staff or property of a Third Party by defective equipment of a Party shall be compensated for by the Party to which the equipment belongs, except as noted in paragraph 10.1.3 c).

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- b) By Staff

Damages caused to the staff or property of a Third Party by the staff of a Party shall be compensated for by the Party in whose territory the damaged occurred, except as noted in paragraph 10.1.3 c).

- c) Gross Negligence or Intentional Misconduct

If damages referred to in paragraphs 10.1.3 a) and 10.1.3 b) were due to the gross negligence or intentional misconduct of the staff of a Party, that Party shall bear the financial responsibility in regard to the Third Party.

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d) Damage by Third Party

In the event of damage of any kind caused by a Third Party to the staff or property of one or both of the Parties, each of these, upon the request of the other Party, shall render it aid in the corroboration of claims on the Third Party.

e) Resolution of Questions

The Party on whose territory the damage was incurred shall, in consultation with the other Party, take upon itself the resolution, with the Third Party, of all questions connected with the determination of the causes, extent, and necessity for compensation for damages incurred. Any such resolution shall have the concurrence of the other Party. After determining the extent of the damages, both Parties shall decide, between themselves, the questions relating to compensation for damages incurred.

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10.2 In the event of any dispute between the two Parties, a Committee shall be appointed by the Parties, with equal representation. The conclusions of the Committee shall be presented to DOE and PNC who will review the conclusions and arrive at a mutual agreement concerning final disposition.

10.3 The foregoing provisions of this Article shall have no applicability to damages caused by a nuclear incident, as defined by the laws of the countries to which the Parties belong. Compensation

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for damages caused by such nuclear incident shall be in accordance with the laws of the countries of the Parties.

ARTICLE 11 - DISCLAIMER

Information transmitted by one Party to the other Party under this Agreement shall be accurate to the best knowledge and belief of the transmitting Party, but the transmitting Party does not warrant the suitability of the information transmitted for any particular use or application by the receiving Party or by any third party.

ARTICLE 12 - LEGAL PROVISIONS

Each party's activities under this Agreement shall be in accordance with its national laws and regulations and the applicable Agreement for Peaceful Nuclear Cooperation between the two Governments. All questions related to the Agreement shall be settled by the Parties by mutual agreement.

ARTICLE 13 - FINANCIAL TERMS

13.1 The cost of collaboration shall be shared by both Parties to support the activities carried out under this Agreement.

13.2 PNC shall provide to DOE a financial contribution per annum in U.S. dollars starting in 1987 and continuing for the duration of the Program.

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The amount of the contribution shall be specified by letter. The Program is based on a contribution of \$5 million per fiscal year from each Party. This is, however, subject to the approval and the appropriation of necessary funding by both Governments.

- 13.3 Contributions by PNC shall be made in two equal payments made within 30 days of the start of the first and second quarters of the Japanese fiscal year, or within 14 days of the Japanese Government Payment Approval for each payment, whichever is later.
- 13.4 At least 3 months prior to the start of each Japanese Fiscal Year, the Parties shall review the scope and funding estimates for the Program for that fiscal year, including reports pursuant to paragraph 5.4 above, to determine if revisions are warranted. If so, recommendations shall be made to the Principal Coordinators for their consideration and action.
- 13.5 A portion of the annual PNC contribution may be utilized, in conjunction with DOE funds, as mutually agreed on a case-by-case basis in writing, for equipment purchased for purposes of research and development. After the research and development is complete, ownership of the equipment shall be assigned on an equitable basis.
- 13.6 It is the intention of DOE to make available certain technologies for commercialization and sale by the private sector in the United States to the extent provided by law.

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- 13.7 Except as otherwise provided in this Agreement, each Party shall bear all costs of its participation in the Program under this Agreement.
- 13.8 The ability of each Party to carry out its obligations under this Agreement is subject to the availability of appropriated funds.

ARTICLE 14 - DURATION AND TERMINATION

- 14.1 This Agreement shall enter into force upon signature and, subject to paragraphs 14.2, 14.3, and 14.4, shall continue for 5 years. Additional research and development and/or a facility design and operation phase may begin thereafter, if both Parties agree, subject to amendment and extension of this Agreement.
- 14.2 This Agreement may be extended by mutual written agreement of the Parties.
- 14.3 This Agreement may be terminated at any time at the discretion of either Party, upon six (6) months' advance notification in writing by the Party seeking to terminate the Agreement. Scheduled contributions to the joint effort shall continue during this 6-month period to permit orderly closeout activities. Such termination shall be without prejudice to the rights which may have accrued under this Agreement to either Party up to the date of such termination.

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14.4 All joint efforts and experiments not completed at the expiration or termination of this Agreement may be continued by mutual agreement until their completion under the terms of this Agreement.

Done in duplicate in the English language on the dates indicated below.

FOR THE UNITED STATES

FOR JAPAN/PNC


THE DEPARTMENT OF ENERGY OF
THE UNITED STATES OF AMERICA

 J. I.

January 12, 1987

Date

June 24, 1987

(Date)